

theories." It is not evident that he studied these theories, or those that have developed from them, with the open mind and carefulness with which he approached his insects in the Orange wilderness, but he felt that they were all too mechanical, and perhaps he was not far wrong. He did not, however, criticise constructively, or take account, so far as we know, of evolutionist yet not Darwinian positions, such as that of Samuel Butler, with whom he would have found himself, in his recoil from the mechanistic, in hearty sympathy.

While Fabre's aloofness from evolutionist interpretation must be regarded as a defect in his scientific work, there is surely truth in what has been said, that "in his sense of the dignity of facts; in his high standard of precision; in his appreciation of the trivial, Fabre came, in spite of himself, into fellowship with Darwin." Perhaps he occasionally read too much of the man into the insect—and he was himself as much a man of feeling as a man of science—but he made a big contribution to the interpretation of animate nature by his convincing evidence of its pervasive mentality and purposiveness. Fabre was a Chevalier of the Legion of Honour and a corresponding member of the Institute.

NOTES.

As an outcome of the recent Manchester meeting, the British Association has invited the following gentlemen to serve on a committee to consider and report upon the question of fuel economy (utilisation of coal and smoke prevention), from a national point of view:—Prof. W. A. Bone, of the Imperial College of Science and Technology, London (chairman); Mr. E. D. Simon, chairman of the Manchester Air Pollution Committee (secretary); Profs. P. P. Bedson (Armstrong College, Newcastle-on-Tyne), J. W. Cobb and J. B. Cohen (Leeds University), H. B. Dixon (Manchester University), Thomas Gray (Royal Technical College, Glasgow), H. S. Hele-Shaw (London), L. T. O'Shea and W. P. Wynne (Sheffield University), and Richard Threlfall (Birmingham), together with Dr. G. T. Beilby (Glasgow), Mr. Ernest Bury, and Dr. J. E. Stead (Middlesbrough and the Cleveland district). The committee, which is empowered to add if necessary to its members, has been selected so as to include representative chemists, engineers, and technologists from all the principal industrial areas.

We are informed that the council of the University of Manchester has received from an anonymous benefactor the sum of 1368*l.* to pay off the debt which remained on the new extension of the museum that was added recently for the housing of the Egyptian antiquities and of collections of minerals.

An exhibition of photographs in monochrome and natural colours, by Mr. H. Essenhigh Corke, will be open free to the public, on presentation of visiting card, at the Royal Photographic Society of Great Britain, 35 Russell Square, W.C., until Saturday, November 27, daily from 11 a.m. until 5 p.m.

THE death is announced, in his eighty-six year, of Mr. Charles Fortey, who was for many years

honorary curator of the Ludlow Natural History Society's Museum. He is gratefully remembered by many geologists and palæontologists for the manner in which he made the unique collection of Upper Silurian fossils in his charge available for purposes of research.

THE death is announced in *Science*, in his eighty-second year, of Prof. W. Watson, from 1865 to 1873 professor of mechanical engineering and descriptive geometry in the Massachusetts Institute of Technology, and since 1884 recording secretary of the American Academy of Arts and Sciences.

In 1903, at the International Geological Congress, Mr. Emmons, supported by the late Prof. E. Suess, proposed the establishment of an institute for the study of geological physics. A preliminary meeting was held on October 14, with Prof. Benjamin Moore in the chair, at which it was decided to form forthwith a society for the encouragement and study of geological physics, commencing with the subject of segregation in rocks. Under the presidency of Prof. Moore the society hopes to do good work by the exchange of specimens, photographs, and literature between its members. An annual subscription of 2*s.* 6*d.* has been fixed for the first two years. Communications are invited by the hon. sec. *pro. tem.*, Mr. G. Abbott, 2 Rusthall Park, Tunbridge Wells.

WE mentioned in our issue of July 8 (p. 514) the case of an officer who had sent to the Natural History Museum at South Kensington the skins of some small animals trapped by him in the trenches in northern France. Dr. Ugolini, of the Royal Technical Institute at Brescia, Italy, writes to tell us that one of his four sons serving in the Italian Army, a doctor of natural science, has been able amid the perils of war on the high mountains of the Trentino, to make valuable geological observations, and to collect and dry plants of particular botanical interest. The keen naturalist always makes use of opportunities of acquiring knowledge; and no doubt many other instances could be given of the persistence of this ruling passion under conditions in which scientific work would scarcely be expected.

THE death is announced, in the *Engineer* for October 15, of Mr. J. S. Graham, the general manager and a director of the Northumberland Shipbuilding Company, Ltd., of Howden-on-Tyne. Mr. Graham was born at Kingborn, Fifeshire, in 1864, and had varied experience in shipbuilding. A notable piece of work under his charge was the construction and delivery of the Havana pontoon dock. During the Spanish-American war he returned to this country, where he joined the Northumberland Shipbuilding Company in 1898.

THE Aristotelian Society will begin its session on November 1 with the inaugural address by the president, Dr. Wildon Carr, on "The Moment of Experience." At the second meeting on December 6, Lord Haldane will read a paper on "Progress in Philosophical Research." Some papers of specially scientific interest are announced, including one by Prof.

Whitehead, on "Space, Time, and Relativity," and one by Prof. Nunn, on "Sense-data and the Physical Object." There will be two symposia, one on "Recognition and Memory," and one on "The Theory of the State."

THE death is announced, at eighty-two years of age, of Colonel T. E. Vickers, C.B., who played a leading part in the development of the great steel firm of that name. He was (says the *Times*) among the pioneers in the early 'seventies of the open-hearth process of melting steel, and achieved a great success, notwithstanding the paucity of scientific knowledge and the lack of instruments for ensuring precision in regard to temperature, etc. The River Don works, now one of the great industrial establishments of the country, were inaugurated in 1866, in order to meet the increased demands resulting from early successes, and since then developments have followed each other in rapid succession in connection with heavy forgings, gun-making, armour manufacture, shipbuilding, and corresponding industries, so that long before Colonel Vickers's retirement in 1909 the firm had become one of the most renowned in the world. Colonel Vickers was awarded the Howard quinquennial prize by the Institution of Civil Engineers, "in recognition of the part taken during his career in developing and improving the production of steel for important engineering purposes."

IN view of the possibility of fires which may arise from further attacks by hostile aircraft, the Commissioner of Police of the metropolis directs attention to the warning published in June last, recommending that a supply of water and sand be kept readily available for dealing with incendiary fires. It is suggested that chemical liquid fire extinguishers should not be purchased without a written guarantee that they comply with official specifications. The specification issued by the Board of Trade (Circular 1560) has reference to the ordinary type of extincteur in which water charged with carbonic acid gas is used as the extinguishing liquid; it indicates the chief points of construction, testing, and maintenance to which attention should be directed in connection with such apparatus. As regards dry powder fire extinguishers, the public is warned that no trust can be placed in them for effectively controlling fires such as are likely to be caused by bombs, whether explosive or incendiary. In dealing with such outbreaks of fire, the prompt and intelligent use of water or sand, or of both, is considered to be the best, simplest, and most economical procedure.

WE regret to announce the death of Dr. Charles Callaway, of Cheltenham, who was one of the pioneers in the study of the Archæan rocks of the British Isles. Dr. Callaway was born at Bristol in 1838, and was educated for the Nonconformist ministry, which he afterwards relinquished for education work and geology. In 1874, when he read his first paper before the Geological Society, much remained to be done in distinguishing the Cambrian rocks from those of earlier date, and in establishing the broader grouping of the latter. The extent of his

geological work is shown by the fact that more than twenty papers by him have been published in the *Quarterly Journal of the Geological Society*, descriptive of the older rocks of Shropshire, the Malverns, Anglesey, Assynt and other regions in the north-west Highlands of Scotland, and parts of Ireland. In some of these regions he was the first to identify the occurrence of subdivisions of the Cambrian rocks and to ascertain their relation to the Archæan groups. In the latter he introduced the terms Uriconian and Longmyndian. The value of his work was recognised by the award to him in 1885 of the Wollaston Fund of the Geological Society, and in 1903 by the award of the Murchison medal. Among the more important of his papers in the *Quarterly Journal of the Geological Society* may be mentioned "The Pre-Cambrian Rocks of Shropshire" (1879-1882) and "The Age of the Newer Gneissic Rocks of the Northern Highlands" (1883), but many others have been published in the *Geological Magazine* and in the *Proceedings of the Cotteswold Naturalists' Field Club*, of which he was a past-president. Dr. Callaway was also a writer on ethical subjects.

To the October number of the *Fortnightly Review* Mr. J. B. C. Kershaw contributes an article on the scientific and engineering aspects of the war. It is pointed out that this is the first great war in which the striking advances of scientific knowledge of recent years have been allowed full play, and how great has been the influence in every direction. The subject is dealt with under four headings—the petrol motor and its application to land transport and aviation; smokeless powders and high explosives; the use of inflammable liquids and poisonous gases; the legal and moral aspects of some of these recent developments. The combination of high power with lightness in weight of the petrol motor rendered possible, first, the automobile, and then the dirigible balloon and aeroplane. The automobile has revolutionised the question of supplies to the front, and warfare on its present scale would otherwise have been impossible; troops fighting in districts long since denuded of food supplies are remarkably well catered for, and the inhabitants saved from starvation. The haulage of heavy siege guns, the use of armoured motor-cars, the rapid movement of troops, and the efficient motor ambulance service, all emphasise the utility of the petrol motor. The results from aviation are of immense importance—in directing and controlling artillery fire, and in observation work. Discussing explosives, the writer, having described briefly the composition and characters of smokeless and high explosives, points out how the invisibility on discharge in daylight enables batteries to be hidden, and how the sniper is able to perform his deadly work undetected. The section on the use of inflammable liquids is largely historical, "Germany's step forward in this direction, however, in reality is a step backwards towards barbarism," the use of such methods dating back to very early times.

A VALUABLE memoir on the evolution and morphology of the Palæozoic star-fishes and brittle stars has just been published by the United States National Museum (*Bulletin 88*). The author, Mr. Charles Schuchert, re-

marks that throughout the Cambrian system not a single star-fish has yet been discovered, from which he infers that the skeleton was not evolved until the Lower Ordovician, "where they will surely be found." The Ordovician *Hudsonaster* he regards as the ancestor of the asterids of the *Phanerozonia* type. Numerous diagrams in the text and several excellent plates illustrate this difficult theme.

THE autumn number of *Bird Notes and News* contains much readable matter in regard to the effect of the war on bird-life in France and Flanders. Swallows returning this spring to their accustomed nesting sites only too often found them reduced to a heap of ruined masonry. In such cases huts erected for military purposes have been adopted as substitutes. This fact shows the tenacity with which these birds cling to their old haunts. Birds roosting between the lines of the opposing forces have on more than one occasion given timely warning to the sleeping men of the near approach of poison gas fumes, by the rustle of their wings and low cries as they passed over our trenches. Except, indeed, when actually within the zone of fire the birds have shown themselves strangely indifferent to the strife around them. Some valuable data in regard to birds in relation to agriculture are also given in this number.

THE *Psychological Bulletin* (vol. xii., No. 8) contains a valuable summary of recent literature on habit formation, imitation, and higher capacities, in animals. The difficult task of summarising the work done in this field has been skilfully performed by Mr. John Shepard. All kinds of animals have been experimented on, from fiddler-crabs to monkeys. A series of studies carried out with pigs, by Messrs. Yerkes and Coynurn, on the multiple choice method, convince the authors that they have established an approach to "free ideas" in that animal. Though visual and kinæsthetic factors in the main determine the responses, the pig, they consider, is more independent of the particular situation than is the crow. The same number also contains a similar summary, by Mr. K. S. Lashley, on sensory discrimination in animals. The experiments recorded are mainly those concerned with responses to light, sound, touch, and smell. Echinoderms, molluscs, and insects, frogs, birds, and various mammals furnished the material for these investigations.

THE October number of *Irish Gardening* contains some extracts of letters written in August by Mr. C. F. Ball, the editor, to Sir F. W. Moore, in which some interesting accounts of the vegetation on the Gallipoli peninsula are given. It is with great regret that we have received the news that Mr. Ball was recently killed in action in the Dardanelles. Mr. Ball, who received his horticultural training at Kew, was assistant to the keeper of the Royal Botanic Gardens, Glasnevin, and, on the outbreak of the war, volunteered for service, and enlisted in the 7th Royal Dublin Fusiliers.

THE new garden plants described in English and foreign botanical and horticultural publications during the year 1914 are brought together in a complete list

in appendix iii. of the Kew Bulletin. Some 350 new plants, varieties and hybrids, are enumerated. In the case of hybrids the parentage, where known, is given, and the place of origin. In the case of new plants a brief description is appended, the country of origin stated, and the name of the introducer. This publication, which is produced annually at Kew, should prove indispensable to the maintenance of a correct nomenclature, and affords valuable information in a concise form respecting new plants under cultivation, abstracted from a very large number of scattered publications.

A CENSUS report on the mosses of Ireland occupies No. 7, section B, of vol. xxxii. of the Proceedings of the Royal Irish Academy. As far as possible the earliest and latest known records are given for each species, except in the case of the commonest and widely distributed species. The divisions of Ireland adopted in Mr. Praeger's "Irish Topographical Botany" are used. Since the publication of David Moore's "Synopsis of the Mosses of Ireland" in 1872, 118 mosses new to Ireland have been recorded, and forty-two of these are recorded for the first time in the present report. The list of records is preceded by a very interesting account of the progress of muscology of Ireland, giving details of the various collectors and their contributions. John Ray is the first to mention mosses in Ireland, and these were probably collected by William Sherard, of Oxford. To David Moore our knowledge of the mosses of Ireland is very largely due, and he added sixty-seven species and varieties to the Irish flora. A useful bibliography of papers dealing with Irish mosses is also included in the report.

THE second part of Father E. Blatter's "Flora of Aden" has recently been published as vol. vii., No. 2, of the Records of the Botanical Survey of India. Part i., which appeared in 1914, consisted of a general account of the flora and of the physical aspects of the country, and was accompanied by a large scale map of the district; the present part deals entirely with a systematic account of the flora. A synopsis of the natural orders—Ranunculaceæ to Urticaceæ—is given, and the families, genera, and species are fully described; keys are also given for the genera and species. The indigenous species number 250, distributed under 138 genera; 33 of these species belong to the grasses, 32 to the Leguminosæ, 18 to the Capparidaceæ, 13 to the Euphorbiaceæ, 11 to the Chenopodiaceæ and Boraginaceæ, and 10 to the Compositæ. Most of the other families are represented by only one or two species. It is of interest to notice that the three plants belonging to the family Burseraceæ found at Aden are the well-known myrrh, *Commiphora abyssinica*; balm of Gilead, *Commiphora opobalsamum*; and frankincense, *Boswellia Carterii*, about which Father Blatter gives some interesting historical details. Much of our information about the flora of Aden is due to the collections of passing travellers, who may have spent only a few hours on shore, but their labours brought together in systematic form make a valuable contribution to our knowledge of the little-known vegetation of southern Arabia.

THE origin of certain valleys in Cleveland, Cumberland, and elsewhere, which have generally been attributed to overflow streams from ice-dammed lakes, has been investigated by Prof. T. G. Bonney. His conclusions are published in a pamphlet ("On Certain Channels," Bowes and Bowes, Cambridge, 1915). Prof. Bonney contends that these channels are relics of an ancient drainage system, in the case of the Cleveland ones, post-Jurassic, if not post-Cretaceous, and in the case of the Cumberland ones, probably pre-Triassic; but, at any rate, in all cases long anterior to the Ice age.

IN the Bulletin of the American Geographical Society (vol. xlvii., pp. 672-80) Prof. R. de C. Ward returns to the discussion of the climatic subdivisions of the United States. Such divisions must be chosen in relation to cyclonic and anticyclonic tracks and movements, and local and characteristic weather distribution around high and low pressures. Changes in climate in the United States are met with in going east and west, and not north and south. The climatic subdivisions must therefore be separated by meridional and not latitudinal lines. East and west boundaries are largely arbitrary. The main divisions arrived at are five, an eastern province and a gulf province, both bounded on the west by the 2000-ft. contour, that is, about 100° W., a plateau province extending west to the generalised line of the main Rocky divide, a plateau province bounded on the west by the Sierra Nevada-Cascade divide, and a Pacific province. The last three are subdivided into northern and southern regions about 43° N.

THE use of a new type of submarine for hydrographical work is described by Mr. Simon Lake in the *Scientific American* (vol. cxiii., No. 13, September 25). The submarine employed is connected with a surface vessel by an access tube. Power is transmitted from a dynamo on the surface vessel to the submarine, which is provided with a single pair of toothed driving wheels at its bows, capable of being turned in any direction. From the air chamber in the submarine a diver can leave the vessel to examine the sea bottom. The author advocates the use of this type of vessel in pairs for harbour contouring. Two such vessels, each with its surface vessel, and linked together by two wires, the upper for telephoning purposes, and the lower one to locate obstructions, steer parallel courses half a mile apart. Any obstruction between the submarines would cause a pull on the wire, and the rock could then be located by one of the vessels steering towards it, reeling in the wires as it went. Mr. Lake omits to say whether his method has proved practicable. If successful it would certainly give more accurate hydrographical data than can be obtained by the sounding machine alone.

An earthquake was felt throughout a large part of Cumberland and in the surrounding counties on October 2 at about 3.15 a.m. The disturbed area, which extends from Newcastle on Dumfriesshire on the north to Langdale and Troutbeck on the south, and from Silloth on the west to beyond Kirkoswald on the east, is about fifty-five miles long from north to south, and about thirty-seven miles wide, and con-

tains about 1600 square miles. It thus seems almost co-extensive with the disturbed area of the Carlisle earthquake of July 9, 1901 (*Quart. Journ. Geol. Soc.*, vol. lviii., 1902, pp. 371-6). This earthquake, according to Dr. Davison, was a twin earthquake, originating in a long deep-seated fault directed N. 5° E., underlying the complicated formations of the Lake District. The principal focus was situated seven miles south-south-west of Carlisle, the other more than twenty miles to the south.

PROF. A. McADIE discusses temperature inversions in relation to frost (Blue Hill Meteorological Observations, Cambridge, U.S.A., 1915). He seems to find more difficulty in explaining the radiation frosts that occur in sheltered valleys than there really is, for the commonly given explanation is quite simple and meets the facts so far as they are known perfectly. The first requirement is free radiation, which means absence of cloud of any kind and also absence of water vapour in the overlying air strata; the second is absence of wind. Given free radiation, the ground is rapidly cooled, and imparts its coldness to the bottom layer of air. When this occurs on the summit or slope of a hill the cold air simply runs off down the slope just as water would do, and its place is taken by warmer air from above; hence on the summit or slope there is no great fall of temperature. But on a plane or in a valley bottom the case is different, because the chilled air cannot run off and the chilling effect of radiation is continued upon the same air, which therefore reaches a low temperature. Under such conditions there is naturally a sharp temperature inversion a short distance above the ground. Absence of wind is a further requisite because wind would mix up the different layers of air, thus warming the lower and cooling the higher, but with free radiation at night there is generally a calm on the surface, though there may be a good breeze a little way up. Prof. McAdie then discusses the artificial means by which damage to growing crops may be reduced or avoided.

PROF. E. BUCKINGHAM, of the Washington Bureau of Standards, sends us several recent papers by him dealing with the principle of similarity and the method of dimensions as applied to the formulation of equations representing physical results. Two of these papers are published in the *Physical Review*, iv., 4 (October, 1914), and the *Journal of the Washington Academy of Sciences*, iv., 13 (July, 1914). In addition, we have a communication to the American Society of Mechanical Engineers, read in June, 1915, and a letter to the *Electrician* (January 15, 1915) criticising Becker's formula for the windage of flywheels, on the ground that the terms are not all of the same dimensions. It is remarkable how prone not only students, but experienced mathematicians and engineers are to write down equations which are obviously of wrong dimensions. After giving numerous illustrations of the method, Prof. Buckingham points out that the method is purely formal and algebraical. If certain quantities and no others are connected by a physical relation, the equation connecting them must necessarily be of a certain form. Any mistake must be due to overlooking one of the

variables on which the result depends. The process cannot supply any new facts. We only get out what we put in, but this is generally in a much more useful form than the original assumptions. It is to be hoped that a study of Prof. Buckingham's papers may lead to a diminution of the mass of unwarrantable deductions and unsound formulæ that now finds its way into scientific and more especially technical literature. We need only instance the rule that "no purely arithmetical operator such as log or sin can be applied to an operand which is not a pure number," as one of the laws which is most often overlooked.

THE leading article in *Engineering* for October 15 discusses the second and final report, just issued, of the Departmental Committee on bulkheads and watertight compartments presided over by Sir Archibald Denny. The report deals with passenger steamers trading to the Continent between the limits of Brest and the Elbe, in the channels surrounding the British Isles, also those plying on short excursions round the coast, and on rivers, estuaries, lakes, and canals. The fundamental principle underlying the recommendations is the same as that in the first report dealing with ocean-going vessels. A difficulty arises in dealing with the classes of ship to which the second report refers, owing to the overlapping in the principal features of design of the respective types; also the sizes of vessels vary greatly. These considerations involved difficulty in stringently applying rules general to all types. It seems probable, however, that the general recommendations of the committee will be acceptable to all; no doubt the exceptions will be considered on their merits by the authorities. It is of interest to note that Channel steamers are treated more severely than overseas passenger steamers in the matter of bulkhead doors—doors worked from the bridge alone are permitted.

MR. JOHN MURRAY's new announcements include:—*Vegetable Fibres*, by Dr. E. Goulding (in the "Imperial Institute Handbooks"); *A History of the Gold Coast and Ashanti from the Earliest Times to the Beginning of the Twentieth Century*, by W. W. Claridge, 2 vols.; and new editions of *The Study of Animal Life*, by Prof. J. Arthur Thomson, illustrated, and *Geometry: an Elementary Treatise on Theory and Practice*, by S. O. Andrew.

OUR ASTRONOMICAL COLUMN.

SELENIUM CELL PHOTOMETRY OF δ ORIONIS.—Some years ago Prof. Joel Stebbins announced that measures of the light of δ Orionis by means of the selenium photometer indicated that this remarkable stellar system was also an eclipse-variable, although visual observation had failed to establish any alteration of magnitude. An extensive series of measures of the feeble fluctuations of its light was secured during the years 1910–11–12 (*Astrophys. Journ.*, September). The only spectroscopic orbit then available was Hartmann's memorable determination which revealed the first example of fixed calcium lines. These elements were used in deducing the light-curve, but the com-

plete discussion was held up whilst Prof. R. H. Curtiss re-investigated the radial velocity variations, and these new elements have been employed in the discussion of the dimensions of the system. The variation of brightness is only 0.15m., of which 0.08m. is considered due to eclipses. The presence of a resisting medium such as the calcium envelope suggested by Hartmann's discovery would help to explain the brightness near periastron, which is a feature of the light-curve. It is only possible to fix limits for the dimensions of the system. The minimal values possible for the radii of the two bodies are 5 times and 1.4 times solar, and the mean density of the system is found to be 0.006 solar.

THE PLANE OF THE SOLAR MOTION.—Criticism of the hypothesis of star-streaming has led to several attempts to develop a gravitational idea of the stellar universe. Thus Prof. H. H. Turner, in 1912, and just about a year earlier Prof. von S. Oppenheim, both suggested that stellar motions were orbital in character, the stars oscillating or revolving about an ideal centre distant from the sun. The solar system itself contains a model closely representing Prof. Oppenheim's conception in the swarm of minor planets viewed from the earth. This fact has again been made of use in an investigation of the solar motion (No. 4813, *Astronomische Nachrichten*), affording means of testing the formulæ employed in deducing the plane of the sun's path from astrometric data by permitting a determination of the known plane of the earth's orbit from the geocentric movements of the minor planets. Ephemerides of 265 minor planets gave mean motions, etc., of the bodies comprised in every two hours of R.A. Reduction by the Bessel-Kobold method hence gave twelve pairs of values of the position of node and inclination of the earth's orbit; eleven showed fair agreement, and yielded the highly satisfactory mean values $\Omega = 0^\circ 44'$, $i = 22^\circ 0'$, instead of 0° and $23^\circ 27'$ respectively. The application to the case of the solar motion was made on the basis of data from Charlier's second memoir. The resulting mean values for all Charlier's areas taken together were $\Omega = 234^\circ 45'$ and $i = 50^\circ 15'$, corresponding solar apex R.A. $267^\circ 58'$, declination $+31.56$; whilst for the galactic areas considered apart the mean values were $\Omega = 245^\circ 30'$ and $i = 58^\circ 25'$, apex R.A., $261^\circ 4'$, declination, $+23^\circ 27'$. Charlier's values were based, it may be recalled, on the proper motions in the P.G.C. of Boss.

DISPLACEMENT OF PHOTOGRAPHIC STELLAR IMAGES.—A curious announcement by M. J. Comas Sola (*Astr. Nach.*, 4814) states that among the stars recorded in successive slightly displaced exposures on the same plate and stellar region, occasionally some pairs of images indicate considerable real or apparent movement in the corresponding star. An example is given. It is added that it is extremely rare that such a displacement appears twice in the same star.

THE SOLAR ECLIPSE, AUGUST 21, 1914.—Prof. Störmer, together with several colleagues, went to Vefsen to observe the eclipse (*Vid. Selk. Forh.*, No. 5, 1915, Christiania). The observers took up stations at Laksfors and 35 km. to the south at Sverrigviken, prepared to secure, should the opportunity arise, parallax photographs of auroræ. Favoured by fine weather and clear skies, unfortunately no auroræ were seen, but the cameras were used in taking a large number of snapshots of the corona, including seventy exposures with a kinematograph. Considering the extremely small scale of the pictures, the form of the corona is very well shown in the reproductions.